

June 13, 2019

Via Email and Fed Ex

Mr. Russell Fish  
Office of Remediation 3LC20  
U.S. Environmental Protection Agency  
1650 Arch Street  
Philadelphia, PA 19103-2029

**Subject:** **Groundwater Interim Report**  
**Honeywell International Inc.**  
**Delaware Valley Works**  
**Claymont, DE**  
**Docket No. RCRA 03-2011-0252CA**

Dear Mr. Fish:

On behalf of Honeywell International Inc. (Honeywell), Wood Environment & Infrastructure Solutions, Inc. (Wood) is submitting this Groundwater Interim Report which summarizes the results of the water level measurements and MW-6 Volatile Organic Compound (VOC) Investigation Area (MW-6 Area) soil and groundwater investigation conducted in April 2019 at the Honeywell Delaware Valley Works (DVW) site in Claymont, Delaware (the Site) (**Figure 1**). This Groundwater Interim Report is being submitted in accordance with the requirements of the February 2019 Resource Conservation and Recovery Act (RCRA) Facility Investigation Phase IV Work Plan that was approved by the United States Environmental Protection Agency (USEPA) on March 12, 2019. The purpose of the Interim Report is to provide the soil and groundwater investigation results and recommendations for USEPA approval.

### **Background**

The April 12, 2016 RCRA Facility Investigation (RFI) Report concluded the following:

1. Groundwater data indicate a previously unidentified source of VOCs near MW-6. The data does not support a VOC source at the documented Solid Waste Management Units (SWMUs) on the DVW. Additional investigation was recommended to locate potential source(s) of the VOCs.
2. Analytical modeling of select VOCs was performed using the Quick Domenico fate and transport model to assess the potential for contaminant migration in groundwater across the downgradient property boundary (Route 13). Breakdown or daughter products, such as vinyl chloride, from chlorinated solvents including



tetrachloroethene (PCE) and trichloroethene (TCE) are present in groundwater. Groundwater elevation data were used to construct contour maps that were then divided into six flow zones (Areas 1 through 6, see **Figure 2**). VOC analytes selected for modeling represented the more mobile compounds present within individual flow areas. The Area 5 model results indicated that concentrations of TCE above USEPA Regional Screening Levels (RSLs) may extend approximately 100 feet and concentrations of vinyl chloride above RSLs may extend approximately 555 feet from the Site boundary in a south-southeast direction. The Area 6 model results indicated concentrations of vinyl chloride above RSLs may extend approximately 160 feet from the Site boundary in a south-southeast direction.

## **Scope of Work**

### ***Synoptic Round of Water Levels***

Wood conducted a synoptic round of groundwater levels from 45 existing monitoring wells from April 30 to May 1, 2019, including five offsite monitoring wells from the South Plant. One of the five monitoring wells at the South Plant, monitoring well MW-107, could not be located. The water level data were used to develop broad and smaller scale groundwater contour maps to aid in the inference of source(s) of VOCs near MW-6 and groundwater delineation in Areas 5 and 6 (**Table 1**, **Figures 3** and **4**).

### ***Surface Geophysical Survey***

Prior to any intrusive work, Wood contacted PA-One Call to locate public utilities. On March 27, 2019, Master Locators of Glen Mills, Pennsylvania, a subcontractor to Wood, conducted a surface geophysical survey. The survey was conducted to evaluate the presence or absence of subsurface features (tanks, utilities, piping, etc.) in the area proposed for the soil boring investigation. The locations of the proposed soil borings were modified as necessary, based on the results of the surface geophysical survey.

### ***MW-6 VOC Investigation Area Soil Borings***

The objective of the MW-6 Area soil boring advancement task was to delineate the unidentified source of VOCs observed in monitoring well MW-6 through the collection of soil and groundwater samples. Sampling and analysis were conducted in accordance with the methods presented in the USEPA-approved Quality Assurance Project Plan (QAPP).

Wood contracted Ameridrill, Inc. (Ameridrill) of Levittown, Pennsylvania, a Pennsylvania and Delaware-licensed well driller, to conduct soil boring activities in the MW-6 Area because MW-6 is near the border of the two States. Ameridrill obtained well permits for each boring on the Delaware side of the border in accordance with Department of Natural Resources and Environmental Control (DNREC) requirements for borings that intercept the water table.

Wood installed 12 of the 14 proposed soil borings in the MW-6 Area from April 2 to 4, 2019, using direct push technology (i.e., Geoprobe®) (see **Figure 5**). The soil borings were originally designated SB-1 through SB-14. Borings SB-5 and SB-12 could not be installed due to the presence of underground utilities. The approximate first five feet of depth in the borings were air-knifed and soil vacuumed prior advancement to ensure subsurface clearance in accordance with Honeywell requirements. The locations of the borings were then off-set from the cleared locations to sample the soil in the approximate first five feet of depth in the boring. The locations of the soil borings were in either asphalt or grass. The borings were advanced continuously to approximately 20 feet below ground surface (bgs) at all locations except for soil boring SB-3. At the location of soil boring SB-3, refusal was encountered at a depth of approximately 7 feet bgs. Soil boring SB-3 was then off-set and advanced to a depth of approximately 15 feet bgs, where the driller encountered a void space. Drilling was stopped due to the uncertainty regarding the void space and the potential for an unknown underground feature.

Continuous soil cores were retrieved by the driller, inspected by the field geologist for key observations (waste materials, staining, and other visual or olfactory indicators of impacts), and screened using a photo-ionization detector (PID) (see boring logs included as **Attachment B**).

Up to two samples per boring were collected for laboratory analysis based on field observations. Groundwater was encountered at depths ranging from approximately 6 to 11 feet bgs. No soil samples from below the groundwater table were collected for laboratory analyses in accordance with the Work Plan.

A groundwater sample was collected from each boring by installing a temporary one-inch diameter polyvinyl chloride (PVC) screen inside the boring. A submersible pump was used to pump groundwater from the boring to remove fine sediment and reduce turbidity. When field observations of turbidity indicated the groundwater cleared sufficiently, a groundwater sample was collected from the clean tubing attached to the pump.

Soil and groundwater samples were submitted for laboratory analysis for VOCs using USEPA Method 8260 and pesticides using USEPA Method 8081B. Duplicate samples were collected at a rate of ten percent (one sample per ten) and analyzed for the same USEPA methods. Chain-of-custody always accompanied the field samples from the time the samples were collected until final analysis at the laboratory.

Non-disposable sample equipment was decontaminated prior to use by an Alconox® and potable water wash followed by a potable water or distilled water rinse. Soil cuttings, decontamination fluids, and purged groundwater were containerized and stored at a Honeywell designated location on the Site for eventual offsite disposal at a licensed facility. Boreholes were backfilled with a neat grout mixture. The asphalt pavement core holes were patched with asphalt.

## **Results**

### ***Synoptic Round of Water Levels***

Groundwater was encountered at depths ranging from 1.98 to 13.49 feet bgs during water level measurements collected from April 30 to May 1, 2019. Groundwater level measurements are summarized in **Table 1**. Groundwater flow direction in the unconsolidated overburden at the Site is generally southerly towards the Delaware River discharge boundary, although there are local variations (see **Figure 3** and **Figure 4**). In the northeastern portion of the Site, shallow groundwater flows to the southeast. In the southwestern portion of the Site, shallow groundwater flows to the south-southeast.

In the central portion of the Site, shallow groundwater flow is to the south-southwest. Groundwater mounding (cause unknown) is apparent around monitoring wells SM19-MW2 and SM20-MW1. In the central and southern part of the MW-6 Area groundwater flow appears flat, with an elevation of approximately 24 feet above mean sea level (amsl). The hydraulic gradient is estimated to be approximately 0.006 feet per foot (ft/ft) across the central and southern part of the MW-6 Area. The current groundwater flow interpretation is similar to previous interpretations.

### ***Surface Geophysical Survey***

The results of the surface geophysical survey are presented on a Master Locators' figure presented in **Attachment C**.

### ***MW-6 VOCs Investigation Area Soil Borings***

Observations during the installation of the soil borings indicated asphalt or gravel to a depth of approximately 3 feet bgs, underlain by silt or sandy silt to a depth of approximately 10 feet bgs, underlain by poorly-graded sand or gravel with silt to a depth of approximately 20 feet bgs, the total depth of the soil borings. Soil boring logs are included in **Attachment B**.

PID readings obtained from soil samples during drilling ranged from 0 to 150 parts per million (ppm). The reading of 150 ppm was measured in an unsaturated soil sample from SB-4 at a depth of approximately 9 feet bgs. In soil boring SB-3, a PID reading of 124 ppm was measured in a saturated soil sample at a depth of approximately 10 feet bgs, approximately three feet above an observed black sheen in the soil cuttings. Groundwater was encountered at depths ranging from approximately 6 to 11 feet bgs.

### ***Soil Analytical Results***

Soil analytical results were compared to the USEPA Risk Based Soil Screening Levels (RSSLs), Industrial Soil Screening Level (ISSLs), and Maximum Concentration Level (MCL) Based Soil Screening Levels (MSSLs). The pesticide compounds 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, alpha-BHC, beta-BHC, and/or gamma-BHC (lindane) were detected in soil

samples at concentrations that exceed the RSSLs or MSSLs. In one boring (SB-14), alpha-BHC was detected in soil samples collected at approximately 5 to 7.5 feet bgs and approximately 7.5 to 10 feet bgs at concentrations exceeding the ISSL of 0.36 milligrams per kilogram (mg/kg). Pesticide concentrations in soil do not appear to vary significantly with depth. A summary of the soil sample analytical results is presented in **Table 2** and **Figure 5**.

The VOCs 1,1-dichloroethene, 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, acetone, benzene, chlorobenzene, cis-1,2-dichloroethene, Freon 113, isopropylbenzene, methylene chloride, PCE, toluene, trichloroethene, and vinyl chloride were detected in soil samples at concentrations that exceed the ISSLs, RSSLs, and/or MSSLs. The highest concentrations of the VOCs benzene, chlorobenzene, Freon 113, and PCE were detected in soil boring SB-4 located in the central portion of the MW-6 Area approximately 60 to 70 feet northeast of MW-6. The depth at which the soil sample was collected corresponded to a relatively high PID measurement of 150 ppm. Concentrations of VOCs in soil generally decrease with depth. For example, at soil boring SB-4, concentrations decrease by an order of magnitude between the sample collected from an approximate depth of 6 to 8 feet bgs and the sample collected from an approximate depth of 8 to 10 feet bgs. A summary of the soil sample analytical results is presented in **Table 2** and **Figure 6**.

#### *Groundwater Analytical Results*

Groundwater analytical results were compared to the USEPA Tapwater RSLs and MCLs. The pesticide compounds 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, alpha-BHC, beta-BHC, or gamma-BHC (lindane) were detected in soil boring groundwater samples at concentrations that exceed the Tapwater RSLs and/or MCLs. A summary of the groundwater sample analytical results is presented in **Table 3** and **Figure 7**.

The VOCs 1,1-dichloroethene, 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, acetone, benzene, chlorobenzene, cis-1,2-dichloroethene, Freon 113, isopropylbenzene, methylene chloride, PCE, toluene, TCE, and vinyl chloride were detected in soil boring groundwater samples at concentrations that exceed Tapwater RSLs and/or MCLs. High concentrations of these VOCs were detected in groundwater samples collected from soil borings SB-3, SB-4, SB-13, and SB-14. The highest concentrations were detected in the groundwater sample collected from soil boring SB-14 located approximately 40 feet south of MW-6 and approximately 100 feet southwest of soil boring SB-4. A summary of the groundwater sample analytical results is presented in **Table 3** and **Figure 8**.

The VOCs detected in groundwater samples from borings in the MW-6 Area are similar in the suite of compounds and concentrations as those detected in well MW-6 during the previous 2015 groundwater sampling event. However, it should be noted that concentrations detected in groundwater samples collected from soil borings may deviate

from concentrations detected in groundwater samples collected from properly constructed groundwater monitoring wells.

### **Conclusions**

The analytical results of the soil samples collected in the unsaturated zone indicate the pesticide compounds 4,4'-DDD, 4,4'-DDE, 4,4,-DDT, alpha-BHC, beta-BHC, and/or gamma-BHC (lindane) at concentrations in exceedance of the ISSLs, RSSLs, and/or MSSLs. Pesticide concentrations in soil in the unsaturated zone do not appear to vary significantly with depth; soil samples were not collected from below the water table. The analytical results of the groundwater samples indicate a similar suite of pesticide compounds in groundwater and at concentrations in exceedance of the Tapwater RSLs and/or MCLs as previous groundwater sampling events.

The VOCs 1,1-dichloroethene, 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, acetone, benzene, chlorobenzene, cis-1,2-dichloroethene, Freon 113, isopropylbenzene, methylene chloride, PCE, toluene, trichloroethene, and vinyl chloride were detected in soil samples at concentrations that exceed the ISSLs and/or MSSLs. VOC concentrations in soil in the unsaturated zone generally decrease with depth. The analytical results of the groundwater samples indicate a similar suite of VOCs in groundwater and at concentrations in exceedance of the Tapwater RSLs and/or MCLs as previous groundwater sampling events.

The PID measurements and analytical results of the soil samples collected from soil boring SB-4 indicate there is a potential unsaturated soil source in the central part of the MW-6 Area relative to the rest of the MW-6 Area sampled. The analytical results of the groundwater sample collected from soil boring SB-4 confirms the VOC impact to groundwater. Several VOCs have concentrations near solubility limits which may indicate a separate phase source. The analytical results of the groundwater samples previously collected from monitoring well MW-6 and the recent analytical results of the groundwater samples collected from soil borings SB-14 and SB-13 indicate groundwater contamination has likely migrated from the SB-4 area to the south-southwest, the direction of local groundwater flow.

The PID measurements and field observations of the soil samples collected from soil boring SB-3 indicate there is a potential saturated soil VOC source in the eastern part of the MW-06 Area. The analytical results of the groundwater sample collected from soil boring SB-3 confirms the VOC impact to the groundwater. The PID measurements of the soil samples collected from SB-1 and the concentrations of chlorobenzene in the soil sample and groundwater sample collected from SB-1 indicate there may be a potential localized chlorobenzene source at the SB-1 location.

## **Future Activities**

The results of the direct push sampling at the MW-6 Area were evaluated and, based on these results, it appears that additional assessment specified in the Work Plan is required. This consists of the following:

- Installation of two additional monitoring wells downgradient of Areas 5 and 6, one downgradient of existing well MW-13 and one downgradient of existing well SM13-MW1;
- Installation of three permanent groundwater monitoring wells to confirm the groundwater analytical results at the location of soil borings SB-1, SB-3, and SB-13/SB-14;
- Additional soil sampling to delineate the extent of elevated VOCs in soil in the area of boring SB-4;
- Further investigation in the area of soil boring SB-3 to evaluate the observed black sheen; and
- Aquifer characterization for use in groundwater modeling and development of potential remedial alternatives which are in line with the Corrective Measures (CM) Framework Technical Memorandum established for the broader Honeywell DVW site.

Attached to this letter is the certification by Honeywell as required by the Administrative Order on Consent, Docket No. RCRA 03-2011-0252CA. Please contact John P. Mihalich at 610-877-6020 if you require additional information.

Sincerely,

**Wood Environment & Infrastructure Solutions, Inc.**



John P. Mihalich, P.G.  
Associate Geologist

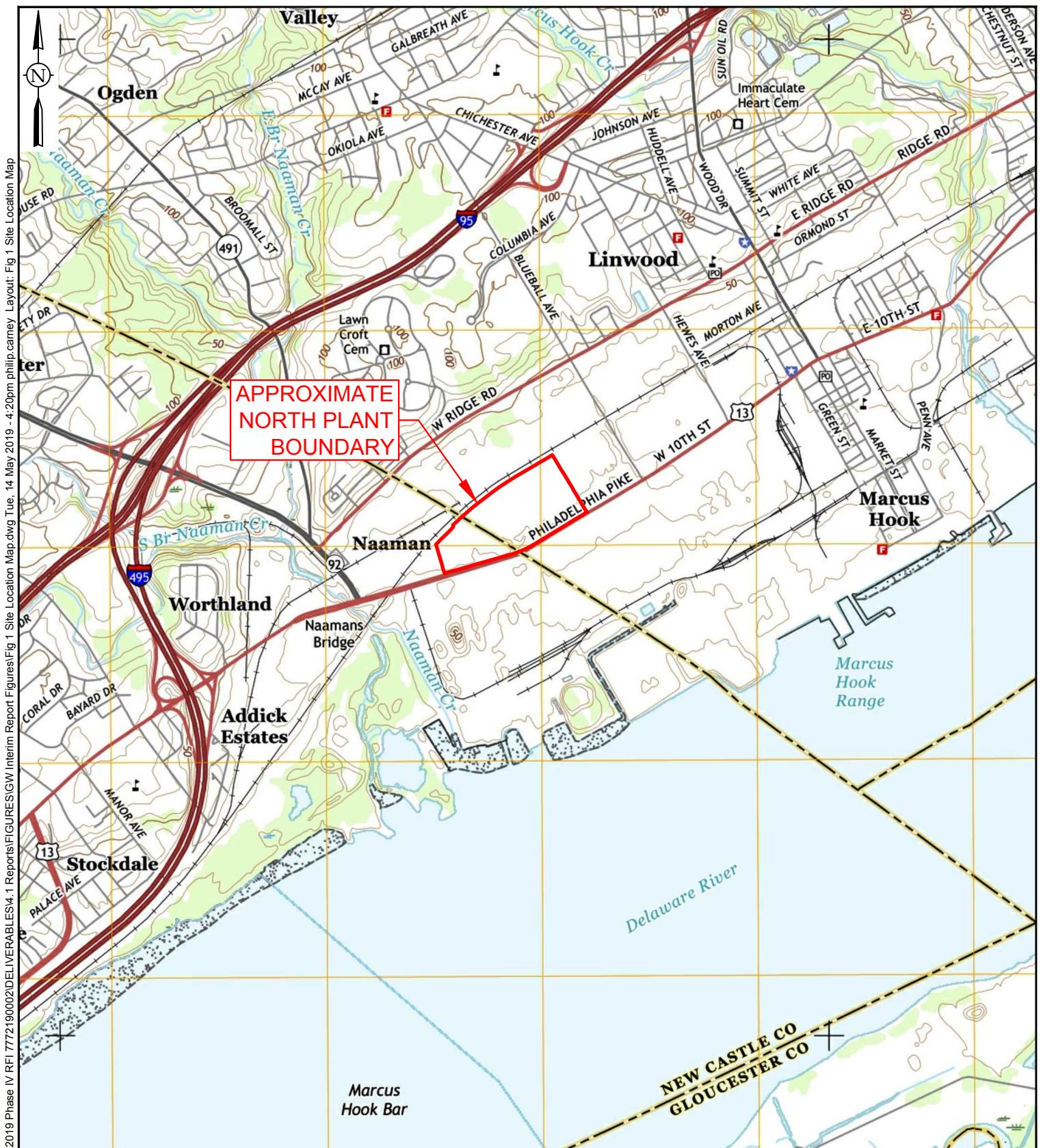


David Side, P.G.  
Senior Geologist II

Attachments:

- Figures 1 through 8
- Tables 1 through 3
- Attachment A. Certification
- Attachment B. Soil Boring Logs
- Attachment C. Master Locators Geophysical Survey Results
- Attachment D. Pesticides Laboratory Reports
- Attachment E. VOCs Laboratory Reports

cc: Steve Coladonato – Honeywell  
Nelson Johnson – Arnold & Porter  
Rus Davis – Honeywell  
Lawrence Matson– DNREC  
James Wentzel, P.E. – PADEP



**LEGEND**  
■ APPROXIMATE NORTH PLANT BOUNDARY

**SOURCE**  
 USGS QUAD "MARCUS HOOK, PA-DE-NJ", 2016.

0 1000' 2000'  
 SCALE: 1" = 2,000'



**Honeywell**  
 DELAWARE VALLEY WORKS  
 CLAYMONT, DELAWARE

**wood.**  
 751 Arbor Way, Suite 180  
 Blue Bell, PA 19422  
 Tel. 610-828-8100  
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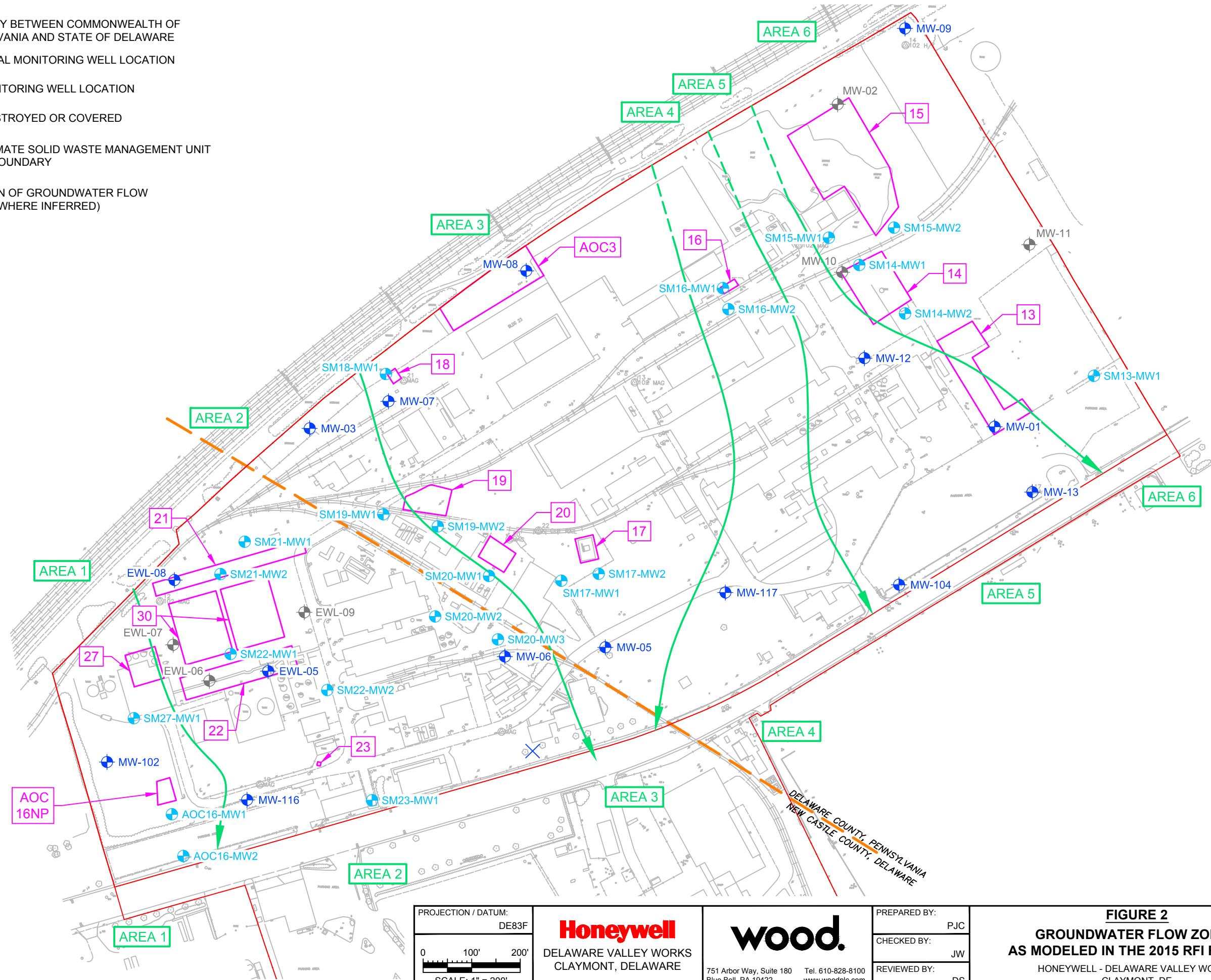
## FIGURE 1 SITE LOCATION MAP

PROJECT NO.:	7772190002
PREPARED BY:	PJC
CHECKED BY:	JPM
REVISION NO.:	0
FIGURE NO.:	1

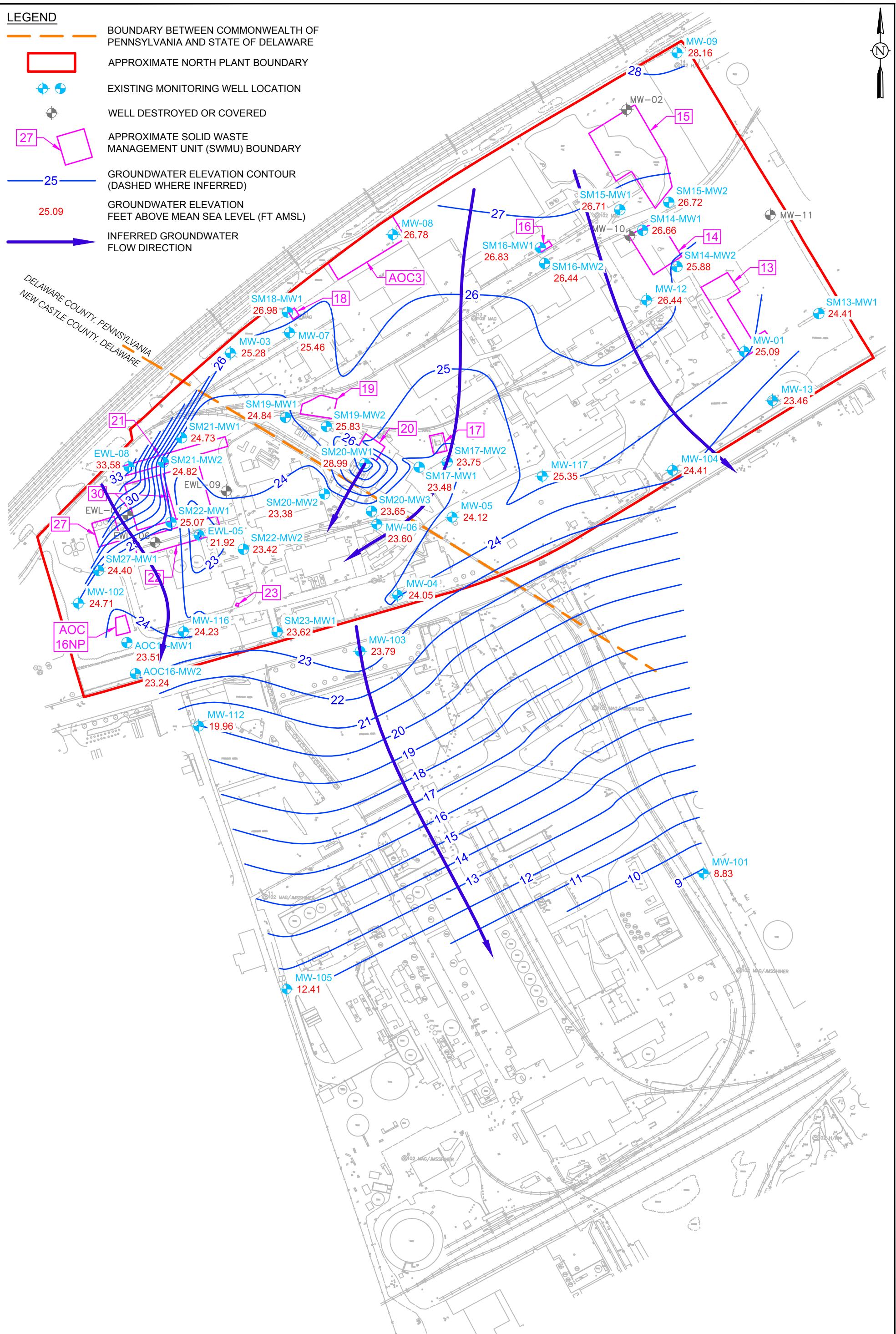
HONEYWELL - DELAWARE VALLEY WORKS  
 CLAYMONT, DE

## LEGEND

- BOUNDARY BETWEEN COMMONWEALTH OF PENNSYLVANIA AND STATE OF DELAWARE
- HISTORICAL MONITORING WELL LOCATION
- 2015 MONITORING WELL LOCATION
- WELL DESTROYED OR COVERED
- [27] APPROXIMATE SOLID WASTE MANAGEMENT UNIT (SWMU) BOUNDARY
- DIRECTION OF GROUNDWATER FLOW (DASHED WHERE INFERRED)



**FIGURE 2**  
**GROUNDWATER FLOW ZONES**  
**AS MODELED IN THE 2015 RFI REPORT**  
HONEYWELL - DELAWARE VALLEY WORKS  
CLAYMONT, DE



PROJECTION / DATUM:  
DE83F

**Honeywell**  
DELAWARE VALLEY WORKS

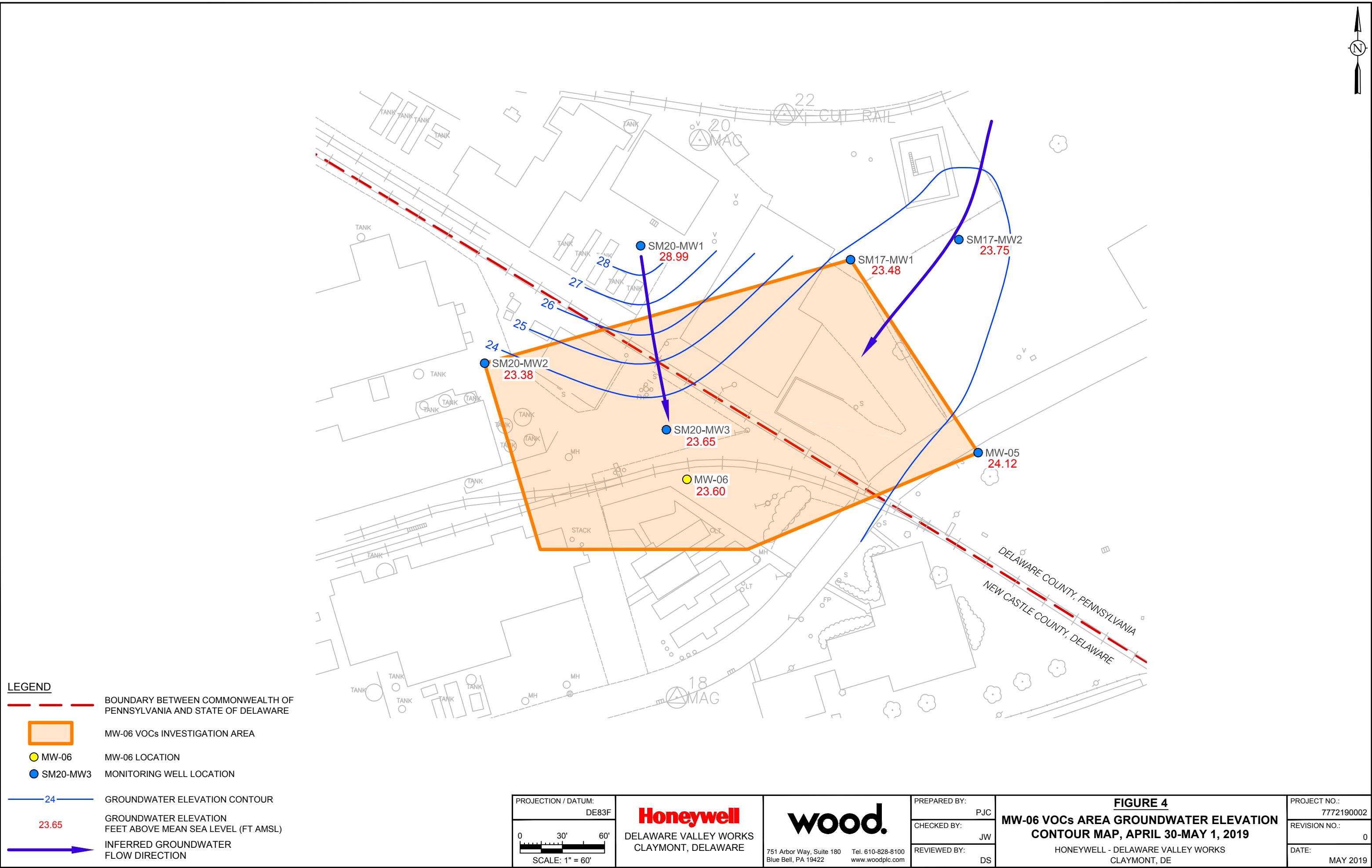
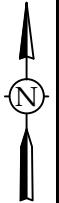
**wood.**

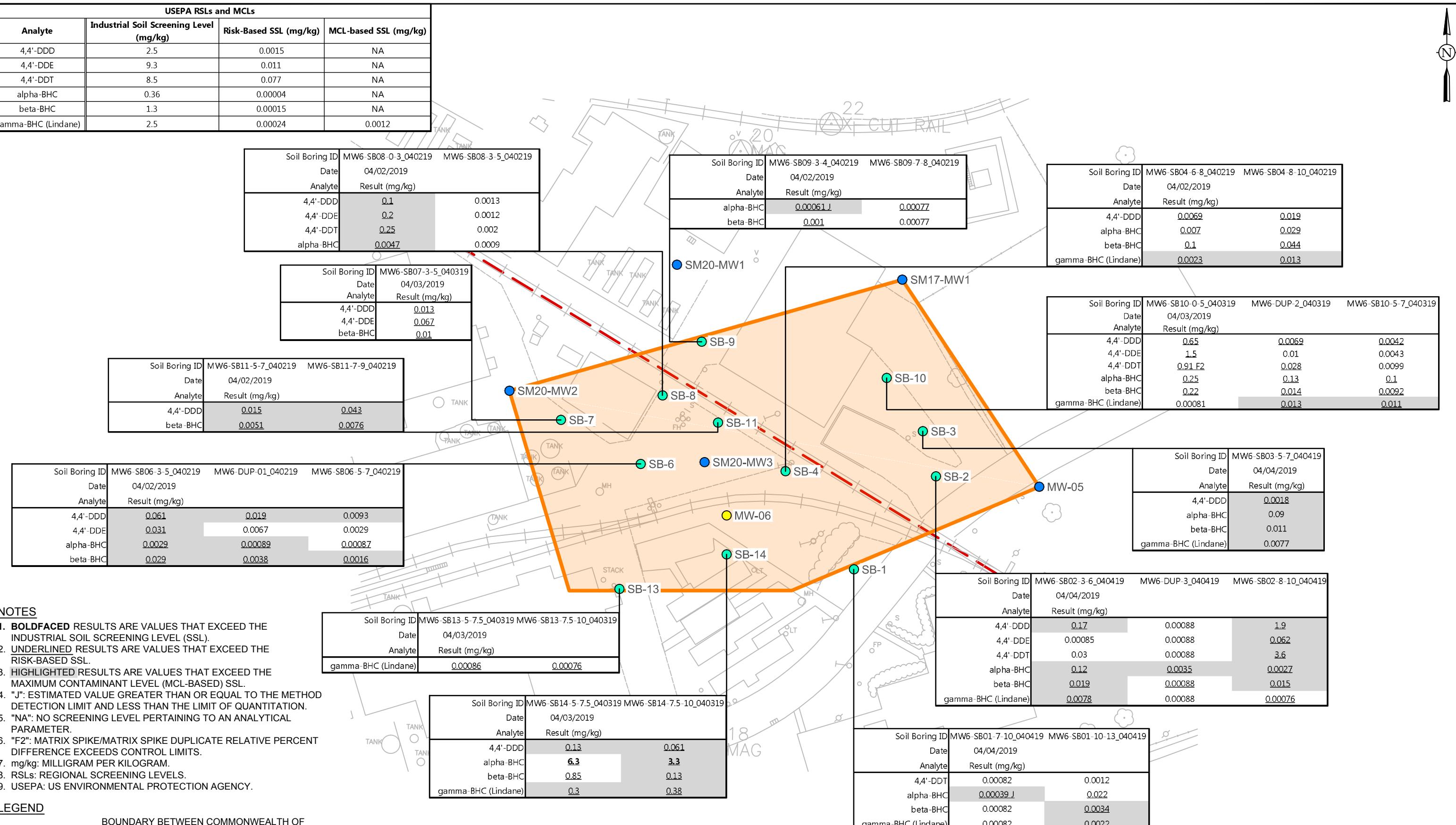
751 Arbor Way, Suite 180  
Blue Bell, PA 19422

PREPARED BY:
CHECKED BY:
REVIEWED BY:

**FIGURE 3**  
**GROUNDWATER ELEVATION CONTOUR MAP,  
APRIL 30-MAY 1, 2019**

PROJECT NO.:	7772190002
REVISION NO.:	0
DATE:	MAY 2019





PROJECTION / DATUM:  
DE83F  
0 30' 60'  
SCALE: 1" = 60'

**Honeywell**  
DELAWARE VALLEY WORKS  
CLAYMONT, DELAWARE

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Tel. 610-828-8100  
www.woodplc.com

PREPARED BY:  
PJC  
CHECKED BY:  
JW  
REVIEWED BY:  
DS

**FIGURE 5**  
**PESTICIDES LABORATORY ANALYTICAL RESULTS, SOIL**  
HONEYWELL - DELAWARE VALLEY WORKS  
CLAYMONT, DE

PROJECT NO.: 7772190002  
REVISION NO.: 0  
DATE: MAY 2019

## USEPA RSLs and MCLs

Analyte	Industrial Soil Screening (mg/kg)	Risk-Based SSL (mg/kg)	MCL-based SSL (mg/kg)
1,1-Dichloroethene	100	0.01	0.0025
1,2-Dichlorobenzene	930	0.03	0.58
1,4-Dichlorobenzene	11	0.00046	0.072
2-Butanone	19000	0.12	NA
Acetone	67000	0.29	NA
Benzene	5.1	0.00023	0.0026
Chlorobenzene	130	0.0053	0.068
cis-1,2-Dichloroethene	230	0.0011	0.021
Freon 113	2800	2.6	NA
Isopropylbenzene	990	0.074	NA
Methylene Chloride	320	0.0027	0.0013
Tetrachloroethene	39	0.0018	0.0023
Toluene	4700	0.076	0.69
Trichloroethene	1.9	0.0001	0.0018
Vinyl Chloride	1.7	0.00001	0.00069

Soil Boring ID: MW6-SB09-3-4 MW6-SB09-7-8		
Date	4/2/2019	
Analyte	Result (mg/kg)	
	NE	NE
cis-1,2-Dichloroethene	0.04 J	
Tetrachloroethene	1.3	
Trichloroethene	0.045 J	

Soil Boring ID: MW6-SB08-0-3 MW6-SB08-3-5		
Date	4/2/2019	
Analyte	Result (mg/kg)	
Benzene	0.0009 J	0.0004

Soil Boring ID: MW6-SB11-5-7 MW6-SB11-7-9		
Date	4/2/2019	
Analyte	Result (mg/kg)	
Tetrachloroethene	0.017	0.038
Trichloroethene	0.0004 J	0.001 J

Soil Boring ID	MW6-SB04-6-8	MW6-SB04-8-10
Date	4/2/2019	
Analyte	Result (mg/kg)	
1,1-Dichloroethene	14	0.74 J
1,2-Dichlorobenzene	590	52
1,4-Dichlorobenzene	9.7	0.52 J
Benzene	11	2.1 J
Chlorobenzene	500	67
Freon 113	5000	240
Isopropylbenzene	1.9 J	0.43
Tetrachloroethene	3900	240
Toluene	8.1 J	1.1 J
Trichloroethene	1.3 J	0.35

Soil Boring ID	MW6-SB10-0-5	MW6 DUP 2 040319	MW6-SB10-5-7
Date	4/3/2019		
Analyte	Result (mg/kg)		
1,4-Dichlorobenzene	0.0004	0.0007 J	0.001
2-Butanone	0.007 J	0.0009	0.008 J
Benzene	0.0004 J	0.002 J	0.0007 J
Chlorobenzene	0.0004	0.011	0.002 J
cis-1,2-Dichloroethene	0.0005	0.003 J	0.009
Methylene Chloride	0.001	0.02	0.004 J
Tetrachloroethene	0.0005	0.012	0.003 J
Vinyl Chloride	0.0005	0.0008 J	0.0006

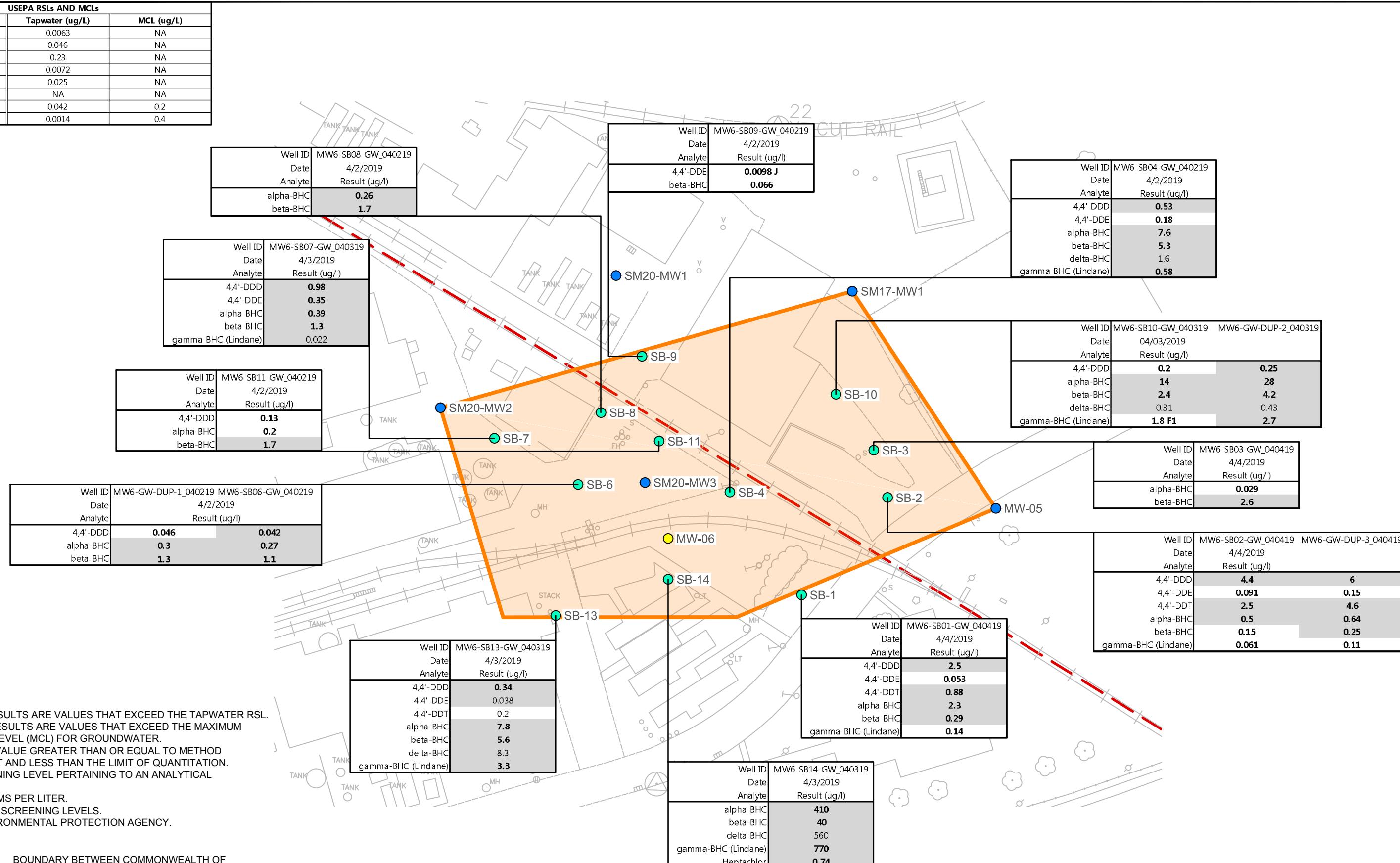
Soil Boring ID	MW6-SB06-3-5	MW6-DUP 1-040219	MW6-SB06-5-7
Date	4/2/2019		
Analyte	Result (mg/kg)		
1,4-Dichlorobenzene	0.0002	0.0006 J	0.0003
Benzene	0.001 J	0.006	0.002 J
cis-1,2-Dichloroethene	0.003	0.25	0.12
Tetrachloroethene	0.005	0.058 J	0.017
Trichloroethene	0.002 J	0.055	0.007
Vinyl Chloride	0.004	0.088	0.027

Soil Boring ID	MW6-SB03-5-7	
Date	4/4/2019	
Analyte	Result (mg/kg)	
1,2,4-Trichlorobenzene	0.002 J	
1,4-Dichlorobenzene	0.002 J	
Benzene	0.011	
Chlorobenzene	0.028	
cis-1,2-Dichloroethene	0.002 J	
Methylene Chloride	0.021	
Tetrachloroethene	0.065	
Toluene	0.094	
Trichloroethene	0.0006 J	
Vinyl Chloride	0.002 J	

Soil Boring ID	MW6-SB14-5-7.5	MW6-SB14-7.5-10
Date	4/3/2019	
Analyte	Result (mg/kg)	
1,1-Dichloroethene	0.57 J	0.67 J
1,2-Dichlorobenzene	89	41
1,4-Dichlorobenzene	0.63 J	0.28 J
Acetone	4.4 J	4.7 J
Benzene	22	21
Chlorobenzene	29	15
cis-1,2-Dichloroethene	4.1	2 J
Freon 113	160	320
Methylene Chloride	1.5 J	4.1
Tetrachloroethene	190	98
Toluene	1.7 J	0.87 J

Soil Boring ID	MW6-SB02-3-6	MW6-DUP 3-040419	MW6-SB02-8-10
Date	4/4/2019		
Analyte	Result (mg/kg)		
1,4-Dichlorobenzene	0.01	0.007	0.03
2-Butanone	0.002 J	0.002 J	4.7 J
Benzene	0.012	0.023	0.014 J
Chlorobenzene	0.55	0.28	1.1

Soil Boring ID	MW6-SB01-7-10	MW6-SB01-10-13
Date	4/4/2019	
Analyte	Result (mg/kg)	
Chlorobenzene	37	0.17

**NOTES**

- BOLDFACED RESULTS** ARE VALUES THAT EXCEED THE TAPWATER RSL.
- HIGHLIGHTED RESULTS ARE VALUES THAT EXCEED THE MAXIMUM CONTAMINANT LEVEL (MCL) FOR GROUNDWATER.
- "J": ESTIMATED VALUE GREATER THAN OR EQUAL TO METHOD DETECTION LIMIT AND LESS THAN THE LIMIT OF QUANTITATION.
- "NA": NO SCREENING LEVEL PERTAINING TO AN ANALYTICAL PARAMETER.
- ug/L: MICROGRAMS PER LITER.
- RSLs: REGIONAL SCREENING LEVELS.
- USEPA: US ENVIRONMENTAL PROTECTION AGENCY.

**LEGEND**

BOUNDARY BETWEEN COMMONWEALTH OF PENNSYLVANIA AND STATE OF DELAWARE



MW-06 VOCs INVESTIGATION AREA



MW-06 LOCATION



MONITORING WELL LOCATION



DIRECT PUSH SAMPLE LOCATION

PROJECTION / DATUM:  
DE83F  
0 30' 60'  
SCALE: 1" = 60'

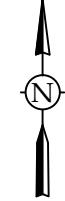
**Honeywell**  
DELAWARE VALLEY WORKS  
CLAYMONT, DELAWARE

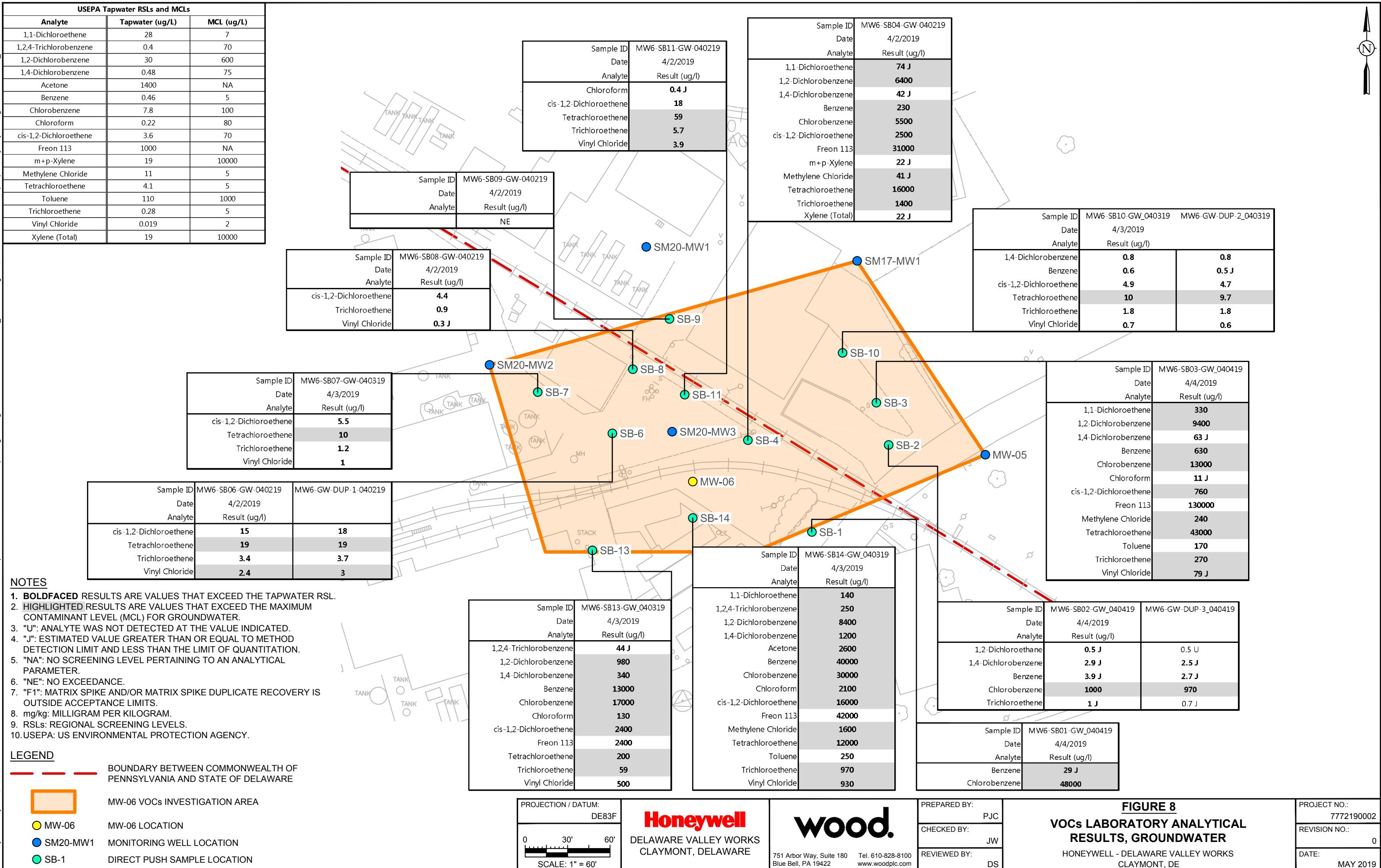
751 Arbor Way, Suite 180  
Blue Bell, PA 19422  
Tel. 610-828-8100  
www.woodplc.com

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PJC  
CHECKED BY:  
JW  
REVIEWED BY:  
DS

**FIGURE 7**  
**PESTICIDES LABORATORY ANALYTICAL RESULTS, GROUNDWATER**  
HONEYWELL - DELAWARE VALLEY WORKS CLAYMONT, DE

PROJECT NO.: 7772190002  
REVISION NO.: 0  
DATE: MAY 2019





**Table. 1**  
**Groundwater Elevation Data**  
**April 30 - May 1, 2019**  
**Groundwater Interim Report**  
**Honeywell Delaware Valley Works**  
**Claymont, DE**  
**Wood Project No. 7772190002**

Well ID	Water Level ft btoc	Top of PVC Elevation ft msl	Groundwater Elevation ft msl	Date Measured
MW-01	7.72	32.81	25.09	5/1/2019
MW-03	5.49	30.77	25.28	4/30/2019
MW-04	8.63	32.68	24.05	4/30/2019
MW-05	5.57	29.69	24.12	4/30/2019
MW-06	9.44	33.04	23.60	5/1/2019
MW-07	4.83	30.29	25.46	4/30/2019
MW-08	7.91	34.69	26.78	4/30/2019
MW-09	6.59	34.75	28.16	4/30/2019
MW-12	3.65	30.09	26.44	5/1/2019
MW-13	5.55	29.01	23.46	5/1/2019
MW-101	10.09	18.92	8.83	5/1/2019
MW-102	10.20	34.91	24.71	4/30/2019
MW-103	6.56	30.35	23.79	5/1/2019
MW-104	6.00	30.41	24.41	5/1/2019
MW-105	11.99	24.4	12.41	5/1/2019
MW-107	NM	NM	NM	NM
MW-109	12.39	12.95	0.56	5/1/2019
MW-112	7.55	27.51	19.96	5/1/2019
MW-116	9.23	33.46	24.23	4/30/2019
MW-117	4.50	29.85	25.35	9/18/2015
EWL-05	9.57	31.49	21.92	4/30/2019
EWL-08	2.36	35.94	33.58	4/30/2019
SM13-MW1	4.88	29.29	24.41	5/1/2019
SM14-MW1	4.29	30.95	26.66	5/1/2019
SM14-MW2	4.31	30.19	25.88	5/1/2019
SM15-MW1	4.42	31.13	26.71	5/1/2019
SM15-MW2	3.60	30.32	26.72	5/1/2019
SM16-MW1	4.04	30.87	26.83	5/1/2019
SM16-MW2	3.31	29.75	26.44	5/1/2019
SM17-MW1	6.02	29.5	23.48	4/30/2019
SM17-MW2	6.82	30.57	23.75	4/30/2019
SM18-MW1	4.05	31.03	26.98	5/1/2019
SM19-MW1	6.11	30.95	24.84	4/30/2019
SM19-MW2	4.72	30.55	25.83	4/30/2019
SM20-MW1	1.98	30.97	28.99	4/30/2019
SM20-MW2	6.33	29.71	23.38	4/30/2019
SM20-MW3	6.56	30.21	23.65	5/1/2019
SM21-MW1	10.75	35.48	24.73	5/1/2019
SM21-MW2	13.49	38.31	24.82	4/30/2019
SM22-MW1	8.33	33.4	25.07	4/30/2019
SM22-MW2	6.54	29.96	23.42	4/30/2019
SM23-MW1	5.80	29.42	23.62	4/30/2019
SM27-MW1	6.28	30.68	24.40	4/30/2019
AOC16-MW1	7.26	30.77	23.51	4/30/2019
AOC16-MW2	6.15	29.39	23.24	4/30/2019

Notes

ft btoc = feet below top of casing (measuring point)

ft msl = feet above mean sea level

NM = not measured; well could not be located

Table 2.  
Soil Analytical Results  
Groundwater Interim Report  
Honeywell Delaware Valley Works  
Claymont, DE  
Wood Project No. 7772190002

Field Sample ID	Industrial Location	Risk-based Soil Screening Level (mg/kg)	MCL-based Soil Screening Level (mg/kg)	MW6-SB01-7-10 040419	MW6-SB01-10-13 040419	MW6-SB02-3-6 040419	MW6-DUP-3 040419	MW6-SB02-8-10 040419	MW6-SB03-5-7 040419	MW6-SB04-6-8 040419	MW6-SB04-8-10 040419	MW6-SB06-3-5 040219	MW6-SB06-5-7 040219	MW6-DUP-01 040219	MW6-SB07-3-5 040319	MW6-SB08-3-3 040219	MW6-SB08-3-5 040219	MW6-SB09-3-4 040219
				MW6-SB01	MW6-SB01	MW6-SB02	MW6-SB02	MW6-SB03	MW6-SB04	MW6-SB04	MW6-SB06	MW6-SB06	MW6-SB07	MW6-SB08	MW6-SB08	MW6-SB09		
Sample Date		04/04/2019	04/04/2019		04/04/2019		04/04/2019		04/02/2019		04/02/2019		04/02/2019		04/02/2019		04/02/2019	
<b>Volatile Organic Compounds (mg/kg)</b>																		
1,1,1-Trichloroethane	3.600	0.28	0.07	0.24 U	2.1 U	0.005 U	0.005 U	0.005 JJ	9.7 U	4.3 U	0.002 U	0.004 U	0.004 U	0.21 U	0.005 U	0.005 U	0.006 U	
1,1,2,2-Tetrachloroethane	2.7	0.00003	NA	0.24 U	2.1 U	0.005 U	0.005 U	0.005 JJ	9.7 U	4.3 U	0.002 U	0.004 U	0.004 U	0.21 U	0.005 U	0.005 U	0.006 U	
1,1,2-Trichloroethane	0.63	0.00001	0.0016	0.24 U	2.1 U	0.005 U	0.005 U	0.005 JJ	9.7 U	4.3 U	0.002 U	0.004 U	0.004 U	0.21 U	0.005 U	0.005 U	0.006 U	
1,1-Dichloroethane	16	0.00078	NA	0.24 U	2.1 U	0.005 U	0.005 U	0.005 JJ	9.7 U	4.3 U	0.002 U	0.004 U	0.004 U	0.21 U	0.005 U	0.005 U	0.006 U	
1,1-Dichloroethene	100	0.01	0.0025	0.24 U	2.1 U	0.005 U	0.005 U	0.005 JJ	14	0.74 J	0.002 U	0.004 U	0.002 J	0.21 U	0.005 U	0.005 U	0.006 U	
1,2,3-Trichlorobenzene	93	0.0021	NA	0.24 U	2.1 U	0.005 U	0.005 U	0.005 JJ	9.7 U	4.3 U	0.002 U	0.004 U	0.004 U	0.21 U	0.005 U	0.005 U	0.006 U	
1,2,4-Trichlorobenzene	26	0.0012	0.2	0.24 U	2.1 U	0.005 U	0.005 U	0.002 J	7.7 J	4.3 U	0.002 U	0.004 U	0.004 U	0.21 U	0.005 U	0.005 U	0.006 U	
1,2-Dibromo-3-chloropropane	0.064	0	0.00009	0.24 U	2.1 U	0.005 U	0.005 U	0.005 JJ	9.7 U	4.3 U	0.002 U	0.004 U	0.004 U	0.21 U	0.005 U	0.005 U	0.006 U	
1,2-Dibromoethane	0.16	0	0.00001	0.24 U	2.1 U	0.005 U	0.005 U	0.005 JJ	9.7 U	4.3 U	0.002 U	0.004 U	0.004 U	0.21 U	0.005 U	0.005 U	0.006 U	
1,2-Dichloroethane	930	0.03	0.58	0.24 U	2.1 U	0.007 J	0.004 J	0.027 J	590	52	0.002 U	0.006 J	0.002 J	0.21 U	0.005 U	0.005 U	0.006 U	
1,2-Dichloropropane	2	0.00005	0.0014	0.24 U	2.1 U	0.005 U	0.005 U	0.005 JJ	9.7 U	4.3 U	0.002 U	0.004 U	0.004 U	0.21 U	0.005 U	0.005 U	0.006 U	
1,3-Dichlorobenzene	6.6	0.0027	0.0017	0.24 U	2.1 U	0.005 U	0.005 U	0.005 JJ	9.7 U	4.3 U	0.002 U	0.004 U	0.004 U	0.21 U	0.005 U	0.005 U	0.006 U	
1,4-Dichlorobenzene	11	0.00046	0.072	0.24 U	2.1 U	0.01	0.007	0.030 J	9.7	0.52 J	0.002 U	0.006 J	0.004 U	0.21 U	0.005 U	0.005 U	0.006 U	
1,4-Dioxane	24	0.00009	NA	12 U	110 U	0.27 U	0.23 U	8.4 U	0.24 U	490 U	220 U	0.12 U	0.22 U	10 U	0.26 U	0.23 U	0.30 U	
2-Butanone	19,000	0.12	NA	0.49 U	4.2 U	0.002 J	0.002 J	0.006 J	19 U	8.7 U	0.003 J	0.001 J	0.009 U	0.41 U	0.003 J	0.009 U	0.005 J	
2-Hexanone	130	0.00088	NA	0.49 U	4.2 U	0.011 U	0.009 U	0.033 U	0.01 U	19 U	8.7 U	0.005 U	0.009 U	0.009 U	0.41 U	0.010 U	0.009 U	0.012 U
4-Methyl-2-pentanone	14,000	0.14	NA	0.49 U	4.2 U	0.011 U	0.009 U	0.033 U	0.01 U	19 U	8.7 U	0.005 U	0.009 U	0.009 U	0.41 U	0.010 U	0.009 U	0.012 U
Acetone	67,000	0.29	NA	0.97 U	8.4 U	0.037	0.031	0.67 U	0.069	98	5.7 J	0.009 U	0.014 J	0.042	0.82 U	0.020 J	0.013 J	0.048
Benzene	5.1	0.00023	0.0026	0.24 U	2.1 U	0.012 J	0.023 J	0.014 J	0.011 J	11	2.1 J	0.002 J	0.006 J	0.021 U	0.009 J	0.005 U	0.006 U	
Bromochloromethane	63	0.0021	NA	0.24 U	2.1 U	0.005 U	0.005 U	0.017 U	0.005 JJ	9.7 U	4.3 U	0.002 U	0.004 U	0.004 U	0.21 U	0.005 U	0.005 U	0.006 U
Bromodichloromethane	1.3	0.00004	0.022	0.24 U	2.1 U	0.005 U	0.005 U	0.017 U	0.005 JJ	9.7 U	4.3 U	0.002 U	0.004 U	0.004 U	0.21 U	0.005 U	0.005 U	0.006 U
Bromoform	86	0.00087	0.021	0.49 U	4.2 U	0.011 U	0.009 U	0.033 U	0.01 U	19 U	8.7 U	0.005 U	0.009 U	0.009 U	0.41 U	0.010 U	0.009 U	0.012 U
Bromomethane	3	0.00019	NA	0.24 U	2.1 J	0.005 U	0.005 U	0.017 J	0.005 U	9.7 J	4.3 J	0.002 U	0.004 J	0.004 J	0.21 J	0.005 J	0.005 J	0.006 J
Carbon Disulfide	350	0.024	NA	0.24 U	2.1 U	0.001 J	0.002 J	0.017 U	0.001 J	9.7 U	4.3 U	0.002 J	0.002 J	0.001 J	0.21 U	0.003 J	0.002 J	0.008
Carbon Tetrachloride	2.9	0.00018	0.0019	0.24 U	2.1 U	0.005 U	0.005 U	0.017 U	0.005 U	9.7 U	4.3 U	0.002 U	0.004 U	0.004 U	0.21 U	0.005 U	0.005 U	0.006 U
Chlorobenzene	130	0.0053	0.068	37	2.1 U	0.55	0.28	1.1 J	0.028 J	500	67	0.004 J	0.001 J	0.005	0.21 U	0.007 J	0.005 U	0.006 U
Chloroethane	5,700	0.59	NA	0.24 J	2.1 J	0.005 U	0.005 U	0.017 J	0.005 U	9.7 U	4.3 U	0.002 U	0.004 J	0.004 J	0.21 U	0.005 J	0.005 J	0.006 J
Chloroform	1.4	0.00006	0.022	0.24 U	2.1 U	0.005 U	0.005 U	0.017 U	0.005 U	9.7 U	4.3 U	0.002 U	0.004 U	0.004 U	0.21 U	0.005 U	0.005 U	0.006 U
Chloromethane	46	0.0049	NA	0.24 U	2.1 U	0.005 U	0.005 U	0.017 U	0.005 U	9.7 U	4.3 U	0.002 U	0.004 J	0.004 J	0.21 U	0.005 J	0.005 J	0.006 J
cis-1,2-Dichloroethene	230	0.0011	0.021	0.24 U	2.1 U	0.005 U	0.005 U	0.017 U	0.005 U	9.7 U	4.3 U	0.002 J	1.6 J	4.3 U	0.003	0.12 J	0.25 J	0.040 J

Table 2.  
Soil Analytical Results  
Groundwater Interim Report  
Honeywell Delaware Valley Works  
Claymont, DE  
Wood Project No. 7772190002

Field Sample ID/ Location	Industrial Soil Screening Level (mg/kg)	Risk-based Soil Screening Level (mg/kg)	MCL-based Soil Screening Level (mg/kg)	MW6-SB09-7-8 040219	MW6-SB10-0-5 040319	MW6-SB10-5-7 040319	MW6-DUP-2 040319	MW6-SB11-5-7 040219	MW6-SB11-7-9 040219	MW6-SB13-5-7.5 040319	MW6-SB13-7.5-10 040319	MW6-SB14-5-7.5 040319	MW6-SB14-7.5-10 040319
				MW6-SB09	MW6-SB10	MW6-SB10	MW6-SB11	MW6-SB11	MW6-SB13	MW6-SB13	MW6-SB14	MW6-SB14	
				04/02/2019	04/03/2019	04/03/2019	04/02/2019	04/02/2019	04/03/2019	04/03/2019	04/03/2019	04/03/2019	
<b>Volatile Organic Compounds (mg/kg)</b>													
1,1,1-Trichloroethane	3.600	0.28	0.07	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
1,1,2,2-Tetrachloroethane	2.7	0.00003	NA	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
1,1,2-Trichloroethane	0.63	0.00001	0.0016	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
1,1-Dichloroethane	16	0.00078	NA	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
1,1-Dichloroethene	100	0.01	0.0025	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.0009 J	0.57 J	0.67 J
1,2,3-Trichlorobenzene	93	0.0021	NA	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
1,2,4-Trichlorobenzene	26	0.0012	0.2	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.001 J	2.6 U	2.3 U
1,2-Dibromo-3-chloropropane	0.064	0	0.00009	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
1,2-Dibromoethane	0.16	0	0.00001	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
1,2-Dichlorobenzene	930	0.03	0.58	0.004 U	0.005 U	0.003 J	0.01 J	0.004 J	0.004 U	0.001 J	0.019 J	89	41
1,2-Dichloroethane	2	0.00005	0.0014	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
1,2-Dichloropropane	6.6	0.00027	0.0017	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
1,3-Dichlorobenzene	NA	NA	NA	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
1,4-Dichlorobenzene	11	0.00046	0.072	0.004 U	0.005 U	0.006 U	0.007 J	0.004 U	0.004 U	0.005 U	0.0007 J	0.63 J	0.28 J
1,4-Dioxane	24	0.00009	NA	0.022 U	0.025 U	0.029 U	0.023 U	0.021 U	0.020 U	0.023 U	0.017 U	130	120
2-Butanone	19,000	0.12	NA	0.009 U	0.007 J	0.012 U	0.009 U	0.008 U	0.009 U	0.007 U	5.3 U	4.7 U	
2-Hexanone	130	0.00088	NA	0.009 U	0.010 U	0.012 U	0.009 U	0.008 U	0.009 U	0.007 U	5.3 U	4.7 U	
4-Methyl-2-pentanone	14,000	0.14	NA	0.009 U	0.010 U	0.012 U	0.009 U	0.008 U	0.009 U	0.007 U	5.3 U	4.7 U	
Acetone	67,000	0.29	NA	0.018 U	0.058	0.008 J	0.011 J	0.007 J	0.016 U	0.020	0.013 J	4.4 J	4.5 J
Benzene	5.1	0.00023	0.0026	0.004 U	0.004 J	0.0007 J	0.002 J	0.004 U	0.004 U	0.041	0.56	22	21
Bromochloromethane	63	0.0021	NA	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
Bromodichloromethane	1.3	0.00004	0.022	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
Bromform	86	0.00087	0.021	0.009 U	0.010 U	0.012 U	0.009 U	0.009 U	0.008 U	0.009 U	0.007 U	5.3 U	4.7 U
Bromomethane	3	0.00019	NA	0.004 J	0.005 U	0.006 U	0.005 U	0.004 J	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
Carbon Disulfide	350	0.024	NA	0.001 J	0.0006 J	0.004 J	0.001 J	0.006	0.007 J	0.001 J	0.003 U	2.6 U	2.3 U
Carbon Tetrachloride	2.9	0.00018	0.0019	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
Chlorobenzene	130	0.0053	0.068	0.004 J	0.005 U	0.003 J	0.011 J	0.0005 J	0.004 U	0.048	0.20 J	29	15
Chloroethane	5,700	0.59	NA	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
Chloroform	1.4	0.00006	0.022	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
Chloromethane	46	0.0049	NA	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
cis-1,2-Dichloroethene	230	0.0011	0.021	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
cis-1,3-Dichloropropene	8.2	0.00017	NA	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
Cyclohexane	2,700	1.3	NA	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
Dibromochloromethane	39	0.00023	0.021	0.007 U	0.008 U	0.009 U	0.007 U	0.007 U	0.007 U	0.007 U	0.006 U	4.2 U	3.7 U
Dichlorodifluoromethane	37	0.03	NA	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 J	2.6 U	2.3 U
Ethylbenzene	25	0.0017	0.78	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
Freon 113	2,800	2.6	NA	0.009 U	0.010 U	0.002 J	0.008 J	0.001 J	0.009 U	0.094 J	160	320	
Isopropylbenzene	990	0.074	NA	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
m+p-Xylene	240	0.019	NA	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
Methyl Acetate	120,000	0.41	NA	0.004 U	0.005 U	0.009	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
Methyl Tertiary Butyl Ether	210	0.0032	NA	0.004 U	0.005 U	0.006 U	0.005 U	0.004 U	0.004 U	0.005 U	0.003 U	2.6 U	2.3 U
Methylcyclohexane	NA	NA	NA	0.004 U	0.005 U	0.							

Table 3.  
Groundwater Analytical Results  
Groundwater Interim Report  
Honeywell Delaware Valley Works  
Claymont, DE  
Wood Project No. 7772190002

Field Sample ID	Tapwater	MCL	MW6-SB01-GW_040419	MW6-SB02-GW_040419	MW6-GW-DUP-3_040419	MW6-SB03-GW_040419	MW6-SB04-GW_040219	MW6-SB06-GW_040219	MW6-GW-DUP-1_040219	MW6-SB07-GW_040319	MW6-SB08-GW_040219	MW6-SB09-GW_040219	MW6-SB10-GW_040319
Location		(ug/L)	MW6-SB01	MW6-SB02	MW6-SB03	MW6-SB04	MW6-SB06	MW6-SB07	MW6-SB08	MW6-SB09	MW6-SB10	MW6	
Sample Date			04/04/2019	04/04/2019	04/04/2019	04/04/2019	04/02/2019	04/02/2019	04/03/2019	04/02/2019	04/02/2019	04/03	
<b>Volatile Organic Compounds (ug/L)</b>													
1,1,1-Trichloroethane	800	200	250 U	5.0 U	5.0 U	51 J	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	0.076	NA	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane	0.041	5	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	2.8	NA	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	28	7	250 U	5.0 U	5.0 U	330 J+	74 J	0.09 J	0.08 J	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-Trichlorobenzene	0.7	NA	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-Trichlorobenzene	0.4	70	250 U	5.0 U	5.0 U	100 U	100 U	0.4 J	0.4 J	0.4 J	0.3 J	0.5 U	0.2 J
1,2-Dibromo-3-chloropropane	0.00033	0.2	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	30	600	250 U	4.4 J	3.9 J	9400 J-	6400	12 J	9.8	2.5	0.2 J	0.5 U	4.6
1,2-Dichloroethane	0.17	5	250 U	0.5 J	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloropropane	0.82	5	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,3-Dichlorobenzene	NA	NA	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.08 J
1,4-Dichlorobenzene	0.48	75	250 U	2.9 J	2.5 J	63 J	42 J	0.3 J	0.3 J	0.2 J	0.1 J	0.5 U	0.8
1,4-Dioxane	0.46	NA	50000 U	1000 U	1000 U	20000 U	20000 U	100 U	100 U	100 U	100 U	100 U	100 U
2-Butanone	560	NA	2500 U	50 U	50 U	1000 U	1000 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	3.8	NA	2500 U	50 U	50 U	1000 U	1000 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone	630	NA	2500 U	50 U	50 U	1000 U	1000 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	1,400	NA	2500 U	50 U	50 U	1000 U	1500 J	6.0 U	5.8 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	0.46	5	29 J	3.9 J	2.7 J	630	230	0.4 J	0.4 J	0.1 J	0.07 J	0.4 J	0.6
Bromoacromethane	8.3	NA	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromodichromethane	0.13	80	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromoform	3.3	80	500 U	10 U	10 U	200 U	200 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	0.75	NA	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Disulfide	81	NA	500 U	10 U	10 U	22 J	200 U	1.0 U	1.0 U	0.1 J	1.0 U	1.3	0.1 J
Carbon Tetrachloride	0.46	5	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	7.8	100	48000	1000	970	13000	5500	6.9	5.7	0.8	0.5 J	0.1 J	4.0
Chloroethane	2,100	NA	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	0.22	80	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloromethane	19	NA	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichloroethene	3.6	70	250 U	1.0 J	0.7 J	760	2500	15	18	5.5	4.4	0.05 J	4.9
cis-1,3-Dichloropropene	0.47	NA	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Cyclohexane	1,300	NA	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromoacromethane	0.87	80	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane	20	NA	250 U	5.0 U	5.0 U	100 U	100 U	0.5 JJ	0.5 JJ	0.5 JJ	0.5 JJ	0.5 JJ	0.5 JJ
Ethylbenzene	1.5	700	250 U	5.0 U	5.0 U	100 U	100 U	0.1 J	0.08 J	0.5 U	0.06 J	0.06 J	0.5 U
Freon 113	1,000	NA	250 U	5.0 U	5.0 U	130000	31000	5.5	5.4	14	0.3 J	0.5 U	2.0
Isopropylbenzene	45	NA	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
m+p-Xylene	19	10,000	250 U	5.0 U	5.0 U	100 U	22 J	0.2 J	0.1 J	0.5 U	0.2 J	0.2 J	0.5 U
Methyl Acetate	2,000	NA	500 U	10 U	10 U	200 U	200 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl Tertiary Butyl Ether	14	NA	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylcyclohexane	NA	NA	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene Chloride	11	5	250 U	5.0 U	5.0 U	240	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	1.6 J
o-Xylene	19	10,000	250 U	5.0 U	5.0 U	100 U	100 U	0.09 J	0.07 J	0.5 U	0.1 J	0.1 J	0.5 U
Styrene	120	100	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	4.1	5	250 U	5.0 U	5.0 U	43000	16000	19	19	10	0.6	0.5 U	10
Toluene	110	1,000	250 U	5.0 U	5.0 U	170	75 J	0.9	0.8	0.3 J	1	1	0.2 J
trans-1,2-Dichloroethene	36	100	250 U	5.0 U	5.0 U	100 U	100 U	0.2 J	0.2 J	0.1 J	0.06 J	0.5 U	0.1 J
trans-1,3-Dichloropropene	0.47	NA	250 U	5.0 U	5.0 U	100 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	0.28	5											

Table 3.  
Groundwater Analytical Results  
Groundwater Interim Report  
Honeywell Delaware Valley Works  
Claymont, DE  
Wood Project No. 7772190002

Field Sample ID	Tapwater	MCL	MW6-GW-DUP-2_040319	MW6-SB11-GW_040219	MW6-SB13-GW_040319	MW6-SB14-GW_040319	TB_040219	FB_040219	TB_040319	FB_040319	TB_040419	FB_040419
Location	(ug/L)	(ug/L)	SB10	MW6-SB11	MW6-SB13	MW6-SB14	QC	QC	QC	QC	QC	QC
Sample Date		/2019		04/02/2019	04/03/2019	04/03/2019	04/02/2019	04/03/2019	04/03/2019	04/04/2019	04/04/2019	
<b>Volatile Organic Compounds (ug/L)</b>												
1,1,1-Trichloroethane	800	200		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	0.076	NA		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane	0.041	5		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethane	2.8	NA		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	28	7		0.5 U	0.09 J		13 J	140	0.5 U	0.5 U	0.5 U	0.5 U
1,2,3-Trichlorobenzene	0.7	NA		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2,4-Trichlorobenzene	0.4	70		0.2 J	0.3 J		44 J	250	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dibromo-3-chloropropane	0.00033	0.2		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichlorobenzene	30	600		4.0 J	2.0		980	8400	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethane	0.17	5		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloropropane	0.82	5		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
1,3-Dichlorobenzene	NA	NA		0.07 J	0.5 U		15 J	37 J	0.5 U	0.5 U	0.5 U	0.5 U
1,4-Dichlorobenzene	0.48	75		0.8 J	0.4 J		340	1200	0.5 U	0.5 U	0.5 U	0.5 U
1,4-Dioxane	0.46	NA		100 U	100 U		10000 U	20000 U	100 U	100 U	100 U	100 U
2-Butanone	560	NA		5.0 U	5.0 U		500 U	1000 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	3.8	NA		5.0 U	5.0 U		500 U	1000 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone	630	NA		5.0 U	5.0 U		500 U	1000 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	1,400	NA		5.0 U	5.0 U		160 J	2600 J	5.4	3.4 J	5.0	3.0 J
Benzene	0.46	5		0.5 J	0.1 J		13000	40000	0.5 U	0.5 U	0.5 U	0.5 U
Bromochloromethane	8.3	NA		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromodichloromethane	0.13	80		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
Bromoform	3.3	80		1.0 U	1.0 U		100 U	200 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane	0.75	NA		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Disulfide	81	NA		0.1 J	1.0 U		100 U	200 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	0.46	5		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	7.8	100		3.4 J	3.4 J		17000	30000	0.5 U	0.5 U	0.5 U	0.5 U
Chloroethane	2,100	NA		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
Chloroform	0.22	80		0.5 U	0.5 U		130	2100	0.5 U	0.6 J	0.5 U	0.6 J
Chloromethane	19	NA		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,2-Dichlorethene	3.6	70		4.7	18		2400	16000	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,3-Dichloropropene	0.47	NA		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
Cyclohexane	1,300	NA		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
Dibromochloromethane	0.87	80		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane	20	NA		0.5 JJ	0.5 JJ		50 JJ	100 JJ	0.5 U	0.5 U	0.5 U	0.5 U
Ethylbenzene	1.5	700		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
Freon 113	1,000	NA		2.2 J	3.8 J		2400	42000	0.5 U	0.5 U	0.5 U	0.5 U
Isopropylbenzene	45	NA		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
m+p-Xylene	19	10,000		0.5 U	0.09 J		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl Acetate	2,000	NA		1.0 U	1.0 U		100 U	200 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl Tertiary Butyl Ether	14	NA		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylcyclohexane	NA	NA		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
Methylene Chloride	11	5		1.1 J	0.5 U		50 U	1600	0.5 U	0.1 J	0.5 U	0.1 J
o-Xylene	19	10,000		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
Styrene	120	100		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
Tetrachloroethene	4.1	5		9.7	59		200	12000	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	110	1,000		0.2 J	0.4 J		64	250	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	36	100		0.1 J	0.4 J		6.3 J	10 J	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,3-Dichloropropene	0.47	NA		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	0.28	5		1.8	5.7		59	970	0.5 U	0.5 U	0.5 U	0.5 U
Trichlorofluoromethane	520	NA		0.5 U	0.5 U		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl Chloride	0.019	2		0.6	3.9		500	930	0.5 U	0.5 U	0.5 U	0.5 U
Xylene (Total)	19	10,000		0.5 U	0.09 J		50 U	100 U	0.5 U	0.5 U	0.5 U	0.5 U
<b>Pesticides (ug/L)</b>												
4,4'-DDD	0.0063	NA		0.25	0.13		0.34	0.010 U	---	---	---	---
4,4'-DDE	0.046	NA		0.010 U	0.026		0.038	0.010 U	---	---	---	---
4,4'-DDT	0.23	NA		0.091 J	0.099 U		0.20	0.010 U	---	---	---	---
Aldrin	0.00092	NA		0.010 U	0.0099 U		0.010 U	0.010 U	---	---	---	---
alpha-BHC	0.0072	NA		28 J	0.20		7.8	410	---	---	---	---
beta-BHC	0.025	NA		4.2 J	1.7		5.6	40	---	---	---	---
cis-Chlordane	0.02											

**ATTACHMENT A**  
**CERTIFICATION**

## CERTIFICATION

I certify that the information contained in or accompanying this Quarterly Progress Report is true, accurate, and complete.

As to the identified portion of this Quarterly Progress Report for which I cannot personally verify its accuracy, I certify under penalty of law that this Report and all attachments were prepared in accordance with procedures designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fines and imprisonment for knowing violations.



Signature: \_\_\_\_\_

Name: Steve Coladonato

Title: Remediation Manager, Honeywell International Inc.

**ATTACHMENT B**  
**SOIL BORING LOGS**

**ATTACHMENT C**  
**MASTER LOCATORS GEOPHYSICAL SURVEY RESULTS**



**master locators**

800.495.4248

info@masterlocators.com

www.masterlocators.com

**Site Name and Location:**

6100 Philadelphia Pike  
Claymont, DE. 19703

**Assumptions & Clarifications**

1. UNLESS OTHERWISE NOTED UNDERGROUND UTILITY DATA IS CONSIDERED QUALITY LEVEL B (QLB) AS DEFINED IN ASCE 38-02: STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA AND IS INTENDED TO SHOW THE APPROXIMATE HORIZONTAL LOCATIONS OF EXISTING UNDERGROUND UTILITIES AS MARKED BY MASTER LOCATORS DURING A GEOPHYSICAL INVESTIGATION PERFORMED WITHIN THE OUTLINED SCOPE OF WORK.

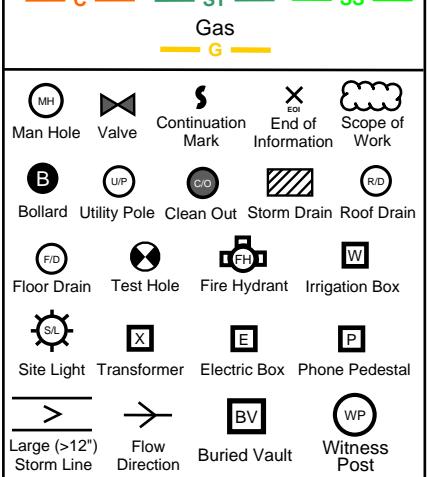
2. ALL UTILITY LOCATIONS SHOWN ON THIS PLAN ARE FOR REFERENCE ONLY. THIS PLAN SHOULD NOT BE USED FOR CONSTRUCTION OR DESIGN PURPOSES AND MASTER LOCATORS IS NOT RESPONSIBLE FOR DAMAGE TO UTILITIES RESULTING FROM ANY CONSTRUCTION WORK BASED ON THESE PLAN.

3. NO BOUNDARY OR PROPERTY SURVEY WORK WAS CONDUCTED IN THE DEVELOPMENT OF THIS PLAN. THE PLAN IS NOT DRAWN TO SCALE.

4. ANY DEPTH INFORMATION PROVIDED IS CONSIDERED APPROXIMATE AND IS NOT GUARANTEED UNLESS LABELED AS QUALITY LEVEL A (QLA) DATA.

**Legend & Color Codes**

Electric	Unknown	Water
E	UNK	W
Comms.	Storm	Sanitary
C	ST	SS
Gas		G



**Revisions:**

Date:	Description:	By:

ML Job #: ML-031419-01577

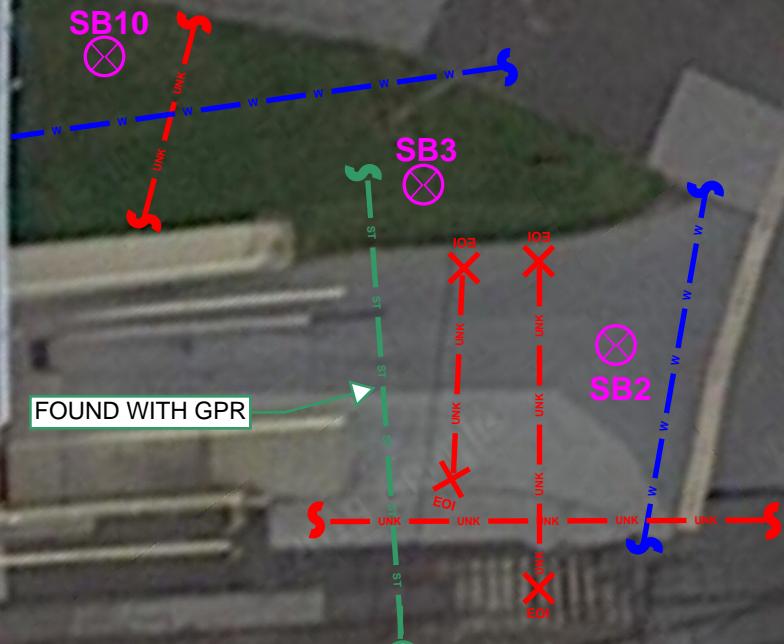
Date: 03/27/19

Technician(s): James Dukenfield, George Fields

Client Name: Wood Environmental and Infrastructure Solutions



WAS NOT PERMITTED TO DUCT ROD SANITARY SEWER. COULD ONLY OPEN AND VERIFY DIRECTION. THIS LINE REPRESENTS THE SUSPECTED PATH.



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**ATTACHMENT D**  
**PESTICIDES LABORATORY REPORTS**

## **VOCS LABORATORY REPORTS**